160. (New) A method as claimed in Claim 145 where at least one sensor is a circular spatially periodic field sensor.

161. (New) A method as claimed in Claim 112 where each sensor has respective drive and sense conductors.

162. (New) A method as claimed in Claim 120, where the eddy-current sensor is a spatially periodic field eddy current sensor.

REMARKS

The Examiner has indicated that Claims 107-109 and 112-121 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. In response, Claims 107-109 and 112-121 have been rewritten as suggested by the Examiner. New Claims 145-162 have been added to the application.

Claims 106-121 were pending in the application. Claims 106 was the sole independent claim. Claims 106, 110, and 111 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. 4,271,393 to Hansen et al. Claim 106 is cancelled by this amendment in order to expedite prosecution of this application. The Applicants do not acquiesce to the rejections and reserve the right to file a continuing application or take such other appropriate action as deemed necessary to protect the cancelled claim.

In the amended claims 107, 108, 112 and 120, description of eddy-current sensors as "circular spatially periodic field sensors" has been removed in order to more clearly define Applicants' invention. That limitation has been moved to new Claims 145, 147, 160 and 162 that depend on claims 107, 108, 112 and 160, respectively.

The rejections of Claims 107-109 and 112-121 under 102(b) are therefore overcome, and Claims 107-109 and 112-121 are believed to be in condition for allowance. New claims 145-162 depend on claims 107-109, 112 and 120. No new matter has been added.

CONCLUSION

In view of the above amendments and remarks, it is believed that all pending claims (Claims 107-121 and 145-162) are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned at (978) 341-0036.

Respectfully submitted,

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MARKED UP VERSION OF AMENDMENTS

Specification Amendments Under 37 C.F.R. § 1.121(b)(1)(iii)

Replace the paragraph at page 16, line 13 through page 17, line 2 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

FIG 1 to FIG 12 illustrate the standard geometry for an MWM sensor and its initial application to fatigue damage measurements. FIG 1 illustrates the basic geometry of the MWM sensor 16, detailed descriptions of which are given in U.S. Pat. Nos. 5,015,951, 5,453,689, and 5,793,206. The sensor includes a meandering primary winding 10 having extended portions for creating the magnetic field and meandering secondary windings 12 within the primary winding for sensing the response. The primary winding is fabricated in a square wave pattern with the dimension of the spatial periodicity termed the spatial wavelength. [(.] A current i_1 is applied to the primary winding and a voltage v_2 is measured at the terminals of the secondary windings. The secondary elements are pulled back from the connecting portions of the primary winding to minimize end effect coupling of the magnetic field and a second set of secondary windings can meander on the opposite side of the primary or dummy elements 14 can be placed between the meanders of the primary to maintain the symmetry of the magnetic field, as described in pending application 09/182,693. The magnetic vector potential produced by the current in the primary can be accurately modeled as a Fourier series summation of spatial sinusoids, with the dominant mode having the spatial wavelength. [(.] For an MWM-Array, the responses from individual or combinations of the secondary windings can be used to provide a plurality of sense signals for a single primary winding construct as described in U.S. Patent 5,793,206.

Claim Amendments Under 37 C.F.R. § 1.121(c)(1)(ii)

107. (Amended) A method [as claimed in Claim 106 where the sensor is mounted] of monitoring damage at a fastener comprising:

mounting an eddy-current sensor to a test substrate under the head of a fastener; and

sensing response of the test substrate to a magnetic field imposed by the eddy-current sensor.

108. (Amended) A method [as claimed in Claim 106 where the sensor is] of monitoring damage at a fastener comprising:

mounting an eddy-current sensor to a structure near a fastener, the sensor being mounted between layers of the structure attached by the fastener;

and

sensing response of the test substrate to a magnetic field imposed by the eddy-current sensor.

109. (Amended) A method [as claimed in Claim 106 where a sensor is mounted] of monitoring damage at a fastener comprising:

mounting respective spatially periodic field eddy-current sensors to a test substrate at both ends of a fastener; and

sensing response of the test substrate to a magnetic field imposed by the eddy-current sensor.

112. (Amended) A method [as claimed in Claim 106 further comprising at least two circular spatially periodic field eddy-current sensors each mounted around a fastener and a single cable connects the drive and sense conductors to the data acquisition system.] for monitoring damage at a fastener comprising:

mounting at least two eddy-current sensors on a test substrate around respective fasteners;

connecting drive and sense conductors of the eddy-current sensors with a single cable to a data acquisition system; and

sensing response of the test substrate to respective magnetic fields imposed by the eddy-current sensors.

115. (Amended) A method as claimed in Claim [112] 161 where [the] sense conductors [from] of pairs of sensing elements are connected together to provide a differential measurement.

120. (Amended) A method [as claimed in Claim 106 where the sensor is mounted] for monitoring damage at a fastener comprising:

mounting an eddy-current sensor in a cylindrical support material shaped in the form of a washer; [for mounting]

mounting the cylindrical support to a test substrate under a fastener head; and

sensing response of the test substrate to a magnetic field imposed by the eddy-current sensor.